

# W5YI

Nation's Oldest Ham Radio Newsletter

## REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable. May be reproduced providing credit is given to The W5YI Report.

Fred Maia, W5YI, Editor, P.O. Box 565101, Dallas, TX 75356-5101

### ★ In This Issue ★

New Commercial Radio Op Exams  
STS-55 Delayed Until March 13th  
New Design for Phase 3D Satellite  
November VE Program Statistics  
HDTV Selection Delayed  
VE Distribution: License Prep Material  
Howard Stern, Broadcast Indecency  
New Cable TV Rules from FCC  
Want to Buy Your Own Frequency?  
CTIA: "Cellular Telephones are Safe"  
Illegal Business Operation on 70 cm.  
North Texas Balloon Project  
British Novices Get More Spectrum  
...and much, much more!

Vol. 15, Issue #5

\$1.50

PUBLISHED TWICE A MONTH

March 1, 1993

## THE FCC'S NEW COMMERCIAL RADIO EXAM SYSTEM

*"Our objective here is to establish a private sector operator examination system that meets the need of applicants for more frequent examination opportunities at convenient locations, the need of industry for examinations that reflect state of the art technology and modern operating conditions, and the need of the Commission to reduce the resources it must expend on commercial operator licensing."*

*FCC Report and Order, PR Docket 92-206, Feb. 12, 1993*

Last month we told you that the Federal Communications Commission would be using the Amateur Service license testing system in the administration and processing of commercial radio operator examinations. Successful completion of those examinations qualify individuals for various commercial radiotelegraph and radiotelephone certificates ...and the new GMDSS (Global Maritime Distress and Safety Service) operator's and maintainer's license.

That disclosure was made based on action taken at the FCC's January 14th Open Meeting and a press release that was issued shortly thereafter. We have now received the actual text of the Report and Order detailing the specifics of how commercial radio operator testing will work. The 31 page document was issued on February 12th.

Actually this proceeding has been on-going since 1986 when the FCC asked if the public interest would be served by transferring commercial radio operator testing to the private sector. As a result of this inquiry, the FCC asked for and received legislation in 1990 to delegate preparation and administration of commercial operator examinations to one or more private entities.

Last August, the Commission issued a *Notice of Proposed Rule Making* which looked toward implementing this authority. In the NPRM, the FCC noted the continuing demand for commercial operator licenses and the problems associated with the current testing system.

The Commission wants the private sector to handle commercial radio operator examinations for the same reason it wanted to turn ham radio operator testing over to the amateur community some ten years ago. Government agencies have been under great pressure for years to conserve and reduce resources. The Clinton administration is already on record of favoring even more federal budget cuts. The FCC also wants to make commercial radio operator testing more accessible to the public.

The FCC has been charging applicants \$35.00 for commercial radio operator testing but they weren't getting those funds. Instead, they went into the general treasury fund. The federal budget crunch severely limited the number of examination locations and frequency of testing. One of the answers is to off-load administrative burdens that can be effectively handled by the



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #2

March 1, 1993

private sector. An important side benefit is that instead of a taxpayer expense, privatization creates jobs. Having commercial radio operators tested by private contractors also solves the problem of out-of-date examination questions since they will assist the government in keeping them current.

## Privatizing Commercial Radio Operator Exams.

Not only did the Commission say how they would be handling Commercial Radio Operator testing in the future, but they also completely rewrote Part 13 of its Rules which covers Commercial Radio Operators.

There are nine types of commercial radio operator licenses, certificates, permits or endorsements that are either required by international radio law or private industry.

## Commercial Radio Licenses and Requirements:

### *First Class Radiotelegraph Operator's Certificate:*

Requires: Telegraphy Elements 3 and 4, Written Elements 1, 5 and 6. (Must be 21 years old and one year of experience.)

### *Second Class Radiotelegraph Operator's Certificate*

Requires: Telegraphy Elements 1 and 2, Written Elements 1, 5 and 6

### *Third Class Radiotelegraph Operator's Certificate*

Requires: Telegraph Elements 1 and 2, Written Elements 1 and 5

### *General Radiotelephone Operator License*

Requires: Written Elements 1 and 3

### *Marine Radio Operator Permit*

Requires: Written Element 1

### *GMDSS Radio Operator's License (\*)*

Requires: Written Element 1 and 7

### *GMDSS Radio Maintainer's License (\*)*

Requires: Written Element 1, 3 and 9

### *Ship Radar Endorsement*

Requires: Written Element 8

### *Six Months Endorsement*

Requires: Minimum 6 months service as a radio operator aboard a U.S. ship. Must hold First or Second Class Radiotelegraph Operator's Certificate during the 6 month period.

[\* = GMDSS, the *Global Maritime Distress and Safety Service*, is an automated ship-to-shore distress alerting system using satellite and advanced terrestrial communications systems. With the implementation of GMDSS, radiotelegraph operators will be phased out.]

## Commercial Radio Operator Examination Elements

These commercial certificates, licenses, permits

or endorsements will be granted by seven written and four telegraphy examinations.

### *Telegraphy Element 1:*

16 code groups per minute. (A code group is random groups of letters, numerals, punctuation and prosigns. Amateur Extra Class operator licensee receives credit for this examination without testing.)

### *Telegraphy Element 2:*

20 words per minute text. Amateur Extra Class operator license also receives credit for this examination without testing.

### *Telegraphy Element 3:*

20 code groups per minute.

### *Telegraphy Element 4:*

25 words per minute text.

### *Written Element 1:*

Basic radio law and radiotelephone operating practice which every maritime operator should be familiar with. (Pool: 120 questions, 24 questions on test, passing score: 18) (Formerly Elements 1 and 2)

### *Written Element 3:*

Electronic fundamentals and techniques required to adjust, repair and maintain radio equipment in the aviation, maritime and international fixed public radio services. (Pool: 380 questions, 76 questions on test, passing score: 57)

### *Written Element 5:*

Radiotelegraph operating procedures and practices primarily required in other than in the Maritime Mobile Services. (Pool: 250 questions, 50 questions on test, passing score: 38)

### *Written Element 6:*

Advanced radiotelegraph operating procedures and practices. Contains technical, legal and other matters including those required in the Maritime Mobile Services. (Pool: 500 questions, 100 questions on test, passing score: 75)

### *Written Element 7:*

Global Maritime Distress and Safety Service, GMDSS operating practices and regulations. (Pool: 380 questions, 76 questions on test, passing score: 57)

### *Written Element 8:*

Ship Radar Techniques. Specialized theory and practice concerning proper installation, servicing and maintenance of ship radar equipment. (Pool: 250 questions, 50 questions on test, passing score: 38)

### *Written Element 9:*

GMDSS radio maintenance practices and



procedures. (Pool: 250 questions, 50 questions on test, passing score: 38)

The FCC's new Commercial Radio Operator testing program will be directed by private groups known as Commercial Operator Licensing Examination Managers (COLEM.) A COLEM, the commercial counterpart of the amateur service's VEC, will be certified by the FCC's Private Radio Bureau after they enter into a Memorandum of Understanding (MOU) with the government in much the same manner as VECs.

The FCC will shortly announce a filing window for accepting requests from organizations that wish to become certified examination managers. "If, however, we receive more requests for certification than we believe are necessary to effectively serve the public or more requests than administrative efficiency permits us to grant, we will give a preference to those entities proposing to provide the best level of service."

The Commission said, "Our experience over the last eight years with the VEC System, which employs multiple entities, has been very favorable. This system has served the needs of licensees and individuals admirably. Further, we believe a system with multiple entities managing operator examinations will encourage competition between the entities and result in good service, responsiveness, and lower prices to the applicants. Therefore, we will certify multiple entities."

A COLEM willing to test for all types of operator licensees nationwide will be given preference over those only willing to only test on a smaller scale. "We will announce by Public Notice, and update as necessary, the names and addresses of entities that we have certified as examination managers when that process is complete. At that time, persons wanting to obtain a commercial radio operator license must go to an examination manager and take the test for the license desired or needed."

## Commercial Radio Operator Testing

Examination managers must agree to be responsible for:

- (1.) announcing examination sessions;
- (2.) verifying the identity of each examinee;
- (3.) preparing, administering and grading examinations;
- (4.) notifying examinees of examination results (pass/fail);
- (5.) certifying that an applicant has passed the test elements required to qualify for a commercial operator license;
- (6.) issuing a document to the examinee indicating

what elements were passed (PPC, Proof-of-Passing Certificate) within 10 days of the examination;

- (7.) ensuring that no activity takes place that would compromise the examination and that no unauthorized material is permitted in the examination room;
- (8.) handling post-examination questions and problems and;
- (9.) treating all applicants equally regarding fees or services rendered.
- (10.) Examiners are prohibited from administering an examination to an employee, relative, or relative of an employee.

## Passing the commercial written examinations

With the assistance of the public, a common question pool for each examination element will be established by the FCC from which all test questions must be taken. Each question pool will contain at least five times the number of questions required for a single examination. All test questions will be placed into the public domain by the FCC.

On February 17, the FCC issued a Public Notice soliciting "...private sector assistance in updating the commercial radio operator examinations. Suggestions for topics and questions for the common question pool for these examinations may be submitted by any individual or entity, and may relate to any examination element. We especially are interested in receiving input concerning examination questions for the two new GMDSS licenses.

To be considered, general topic suggestions and specific questions must be in typed form and submitted by March 31, 1993. Suggestions concerning general topics that should be covered must specify the particular element or license with which they are associated and must include a narrative on why they are important. Each question must be stated as a complete sentence and may refer to a diagram. For each question, the following information must be included:

- (1.) Element number associated with the question.
- (2.) Correct answer and at least three multiple choice distracters.
- (3.) Name of source document upon which it is based, and;
- (4.) Citation (explanation) for answer.

Two paper copies of suggested topics and questions are to be submitted to: Federal Communications Commission, Personal Radio Branch, Room



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #4

March 1, 1993

5322, Washington, DC 20554, Attention: L. COLE Questions. Entities submitting ten or more questions are requested to include a disk formatted for IBM-compatible systems listing the questions using Word Perfect 5.1. No submissions will be returned.

Once we have selected the questions to make up the common question pool we will release the questions and the algorithm for preparing examination question sets by public notice." The pass rate for all written examinations is 75 percent.

Handicapped applicants must be accommodated and special examination procedures employed if necessary. A doctor's certification indicating the nature of the disability may be required by the examination manager.

## Passing the commercial telegraphy examinations

Applicants are required to copy a telegraphy test message by ear for a period of one minute but - as in the amateur service - the sending examination need not be administered. "Passing a telegraphy receiving examination is adequate proof of an examinee's ability to send and receive telegraphy." The examination manager is responsible for determining the correctness of the examinee's answers.

Examinees are responsible for knowing all letters of the alphabet, numerals 0-9, period, comma, question mark, slant mark, and prosigns AR, BT and SK. All telegraphy examinations must contain each character at least once. Five letters are counted as a word; each numeral, punctuation mark, and prosign count as two letters of the alphabet.

Of particular interest to amateur radio operators is that examination credit toward commercial telegraphy Element 1 and 2 will be routinely allowed Amateur Extra Class operators who have already passed the amateur Element 1(C) 20 words-per-minute code test. This means that Extra Class amateurs can qualify for the Second or Third Class Radiotelegraph Operator's Certificate by passing only their associated written examinations.

The FCC did not establish an examination fee schedule. Instead, they will require commercial license examination managers to include a proposed fee structure and justification - including cost estimates - when they apply to become a COLEM. "We expect fees charged to be reasonable." An annual report must be filed by the COLEM justifying any change in test fees and showing the number of examinations administered and the pass rate.

Once the requirements for a commercial radio operator license are fulfilled, the applicant fills out the appropriate license application form and mails it

together with the necessary valid *Proof-of-Passing Certificates* (PPC) to the FCC's licensing facility in Gettysburg. The PPC must be issued by the Commercial Operator Licensing Examination Manager within 10 days of completion of the examination element and are valid for 365 days from the date it is issued.

The FCC is now in the process of issuing two Public Notices. One will announce a filing window for accepting requests from entities that desire to become certified examination managers. The other will solicit examination topics, test questions and comments on the appropriate number of questions in each topic.

## SAREX UPDATE - STS-55 DELAYED 2 WEEKS

The scheduled launch of the Space Shuttle Columbia carrying SAREX (the Shuttle Amateur Radio Experiment) has been postponed two weeks. Official reason for the delay is given as "...suspect incorrect retainer seals on the HPOTP (High Pressure Oxidizer TurboPump) on the SSME (Space Shuttle Main Engines.)" The new lift-off date is now Saturday, March 13th.

Astronaut **Charles Precourt** has just received his amateur radio call sign (**KB5YSQ**) and joins Commander **Steve Nagel** (**N5RAW**) and **Jerry Ross** (**N5SCW**) on STS-55. In addition, the two German Payload Specialists on board are licensed radio amateurs - **Hans Schlegel** is **DG1KIH** and **Ulich Walter**, **DG1KIM**.

**Gary Shane**, **WB5WOW**, SAREX Coordinator for the Clear Lake Amateur Radio Club is currently working with youngsters at four schools in the Houston area who will communicate with STS-55 and STS-56 by amateur radio. Both the Fairmont Elementary in Deer Park and Ward Elementary in Clear Lake, Texas, plan ham radio contacts with Columbia.

Astronaut Hans Schlegel's children attend school at Ward and they have been included in the training as well. The youngsters have been provided with STS-55 mission patches, decals, posters, pins, and the school PTA will purchase each a mission t-shirt. The time for Ward's contact is Mission Elapsed Time (MET) of 3 days, 0 hours, and 39 minutes. A 3-D color shuttle tracking station and monitor will be placed in the school for the duration of the mission.

The students will be talking with Astronaut Hans Schlegel in orbit as he enters his pre-sleep period. His two children, Anja and Lisa, will have the opportunity to say hello to their father and then turn the microphone over to the other students to ask their questions. Hans' children have chosen to speak to their father in German and he will reply to them in German as well. All other communications are planned to be in English.



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #5

March 1, 1993

During one of the school training sessions, the students were able to participate in an imitation space radio contact with the astronauts of STS-56 who were in the shuttle simulator at the Johnson Space Center practicing for their mission which was originally scheduled for March 11th. They spoke to **Ken Cameron, KB5AWP** and asked him questions about space. The contact was made through the W5RRR 146.64 repeater at the Johnson Space Center.

Due to the STS-55 slipping a couple of weeks, STS-56, will necessarily also be delayed. Both STS-55 and STS-56 are SAREX flights and each will have five ham astronauts on board - a total of ten orbiting within a month's time! The newest STS-56 ham astronaut is **Steve Oswald** who just received **KB5YSR**. Besides Ken Cameron, Oswald is joined by astronauts **Ken Cockrell (KB5UAH)**, **Ellen Ochoa (KB5TZZ)** and **Mike Foale (KB5UAC)**. The STS-56 astronauts are scheduled to talk to students at Armand Bayou Elementary in Clear Lake and McWhorter Elementary in Webster, Texas.

## NEW DESIGN FOR PHASE 3D APPROVED

The European Space Agency (ESA) informed AMSAT in November that it would not provide the interface which the Phase 3D amateur satellite had been designed to over the past two years.

AMSAT determined that it was necessary to completely redesign Phase 3D into a much smaller spacecraft. It was not known, however, if ESA would support the new concept. But, on January 27, 1993 the answer came. In a meeting between **Dr. Karl Meinzer DJ4ZC** and ESA officials, an agreement was reached on the use of the new configuration. The final detailed design of the structural and thermal aspects of the satellite can now begin in earnest. **Dick Jansson, WD4FAB** is working full-time on the task and expects to have it completed by August.

This new design concept offers several advantages compared to the previous one. The design work for AMSAT is considerably simpler than the old concept and the new 9 foot diameter by 27.5 inch high Phase 3D spacecraft will be significantly lighter. This means that much less propellant will be required to get into the final orbit. With the new design approach, P3D is estimated to weigh only about 950 pounds - including propellant - as opposed to over 1300 pounds previously. It should be emphasized that this smaller spacecraft will be just as capable as the old one, in so far as providing amateur communications and supporting various other experiments. It is currently estimated, however, that the solar arrays will produce somewhat less power, about 730 watts compared with 870 watts for the old configuration.

## NOVEMBER VE PROGRAM STATISTICS

<u>November</u> <u>No. VEC's</u>	<u>1990</u> <u>*18</u>	<u>1991</u> <u>*18</u>	<u>1992</u> <u>*18</u>
-------------------------------------	---------------------------	---------------------------	---------------------------

<u>Testing Sessions</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
<u>VEC</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
ARRL	46.7%	46.0%	43.7%
W5YI	33.2	38.9	41.3
CAVEC	5.7	3.6	3.9
GtLakes*	4.7	4.0	1.9
Others (14)	9.7	7.5	9.2
<b>Year-to-Date Sessions</b>	<b>5610</b>	<b>7257</b>	<b>9080</b>

<u>Elements Administ.</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
<u>VEC</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
ARRL	50.0%	54.4%	49.3%
W5YI	25.9	28.9	32.3
CAVEC	8.2	4.6	4.3
GtLakes*	4.1	2.6	1.7
Others (14)	11.8	9.5	12.4
<b>Year-to-Date Elements</b>	<b>96433</b>	<b>154465</b>	<b>176309</b>

<u>Applicants Tested</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
<u>VEC</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
ARRL	50.9%	53.0%	48.4%
W5YI	26.7	28.9	33.5
CAVEC	4.3	4.1	4.4
GtLakes*	6.7	4.2	1.7
Others (14)	11.4	9.8	12.0
<b>Year-to-Date Tested</b>	<b>58972</b>	<b>92876</b>	<b>105656</b>

(\* = Great Lakes is the former DeVry VEC)

<u>November</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
Pass Rate - All	59.8%	66.0%	65.3%
Applicants/Session	9.9	11.7	10.2
Elements/Applicant	1.6	1.7	1.7
Sessions Per VEC	33.1	38.6	44.3

## Administrative Errors by VE's/VEC's

<u>November</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>
Defect. Applications	0.5%	0.5%	0.1%
Late Filed Sessions	0.0%	0.6%	1.6%
Defective Reports	0.5%	0.9%	0.1%

(\* ) **Note:** The number of new Technician Class licenses continues to skyrocket! Most of the exams administered are for the written Element 2 and 3A. Technician is now the entry level of choice by most newcomers. For the first 11 months of 1992 versus 1991:

Number of Test Sessions: + 25.1% Increase  
 Number of Tests Administered: + 14.2% Increase  
 Number of Applicants Tested: + 13.8% Increase

[Source: Personal Radio Branch/FCC; Washington, D.C.]



## Telecommunications Technology Update!

### PAINT ON THE RESISTORS!

Curious as to what's inside his newest piece of electronic hardware, the ham removes the lid with a screwdriver and is amazed at what he sees on the interior circuit board. "No resistors!" he says, astonished. "What happened to all the resistors?"

They're still there. They just don't look like resistors anymore. Within circuits that must occupy as little space as possible, surface-mount components are the norm. But even then, surface-mount resistors take up valuable board space because there are invariably far more resistors than any other component on the average circuit board. The move now is to replace individual resistors and instead use polymer thick-film paste.

If you mix together carbon powder, silica, and a resin to glue everything together, you literally have a bowl of resistance. Printing a small, wide line on a circuit board with this mixture and allowing it to dry will result in a working resistor of a fixed value. Need a different value of resistance? Just change the recipe and use a different amount of carbon powder. When the circuit board is completed, all the resistors look like black hyphens, each about the size of any other surface-mount component.

Polymer resistors are ideally suited for VHF use because they contain no metal mounting leads to alter their performance at microwave frequencies.

### TV SETS YOU CAN WEAR!

You may be familiar with the "heads-up" display available in jet fighters and some automobile cockpits. Computer displays are superimposed over the viewing glass so images appear to be float-

ing in space. A company called Virtual Vision makes a video "eye-wear" device that displays a television picture through special eye-glasses that allow the viewer to see everything around him, yet also show the TV signal so that it appears to be floating in space.

Called Virtual Vision Sport eye-glasses, they present the illusion of a wide-screen television about 10 feet in front of you. The video comes from a small tuner worn on your belt, and a link connects it to the five-ounce glasses. Now you truly can go for a walk and watch television at the same time.

### BATTLING LASER RADAR UNITS

About to throw away your radar detector because the police are switching over to laser? Hold on to it; it's not ready for mothballs yet. Thousands of mobile police units still use the RF method of speed traps, and the prohibitive cost of the new laser-based speed guns keep most departments from purchasing them for now.

The major radar-detector companies are already working on similar devices that detect those laser beams aimed at your car. Laser beams spread only a few feet, but that's enough for these new units to detect them. Not only will they tell you about the speed trap up ahead, but they will also tell you exactly where it is located.

"You can't catch what you can't see," is the slogan of Rocky Mountain Radar (Tel. 303/791-9921). They showed two rather interesting anti-police radar devices at the last Consumer Electronic Show. The **Spirit Radar Jammer** uses "passive re-radiators" to make any vehicle electronically invisible on all 3 radar frequency bands. Their **Spectre Laser Jammer** does the same thing against LTI, Kustom laser-types and instant-on Lidar.

### "INSIDE BODY VIDEO" SURGERY

"The knees are the first to go," football players are told. In the past, surgeons repairing torn cartilage were forced to cut open the layer of skin surrounding the knee. After the operation, the patients had to go through a long, painful series of rehabilitation training sessions to regain strength and dexterity.

Now, doctors are using a process that doesn't involve cutting open anything. Minimal Invasive Surgery (MIS) merely pokes a small opening through the skin, through which a thin cable can be inserted. At the end of the cable is a miniature video camera that relays what it sees to a monitor for the doctor to view while operating. The cable also includes miniature tools to actually perform the surgery, so the doctor can work and watch the results without cutting the skin.

The operating room is filled with hazardous materials, and making a cable that can work unaffected in such a dangerous area is tricky. Cables must also be sterilized before use. For MIS, cables and connectors are coated with a material called GOR-TEX. It is a Teflon by-product.

### ELECTROSTATIC DISCHARGE

When you receive a spark from a doorknob on a day of low humidity, that's a sure sign that electronic components are in serious danger of electrostatic discharge (ESD). Just taking off a sweater in front of a computer poses a risk. Semiconductor manufacturers store integrated circuits in long, narrow tubes to prevent them from being shocked by ESD. The plastic, translucent tubes are treated at the factory so as to safely discharge any ESD hits.



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #7

March 1, 1993

But sometimes an ESD hit is so severe that it can overpower the protection and render a set of integrated circuits completely useless. But an ESD hit leaves no obvious evidence at first glance. Only trying to put the chips into operation will reveal whether they are healthy or not. How do you know if they have taken a static blow?

GEC Plessey Semiconductors has introduced an ESD detector to tell the user if a tube of I.C.'s has been hit. The detector uses a liquid-crystal display that changes color after an ESD event, from opaque to red or black. Each detector measures only one square inch, and each is powered by a small lithium battery.

Best of all, these detectors can be attached to almost anything electronic that users want to protect. While they don't prevent ESD shocks, they do inform users if such events have occurred.

## **CAPACITOR SIZE TO SHRINK**

Surface-mount chip capacitors may get even smaller! Although already present inside every HT radio, the new technique designed to further decrease size and increase performance will allow even more circuitry to be packed within the same area.

Surface-mount chip capacitors perform the same task as ceramic bypass capacitors. They are in almost every new RF circuit built today. They are so small that over hundred of them could fit in a thimble. Close examination shows that a chip capacitor looks like an unwrapped Hershey's chocolate bar, a dark bar with silver ends. The metallic ends provide the means of soldering the capacitor to the circuit board, as that is the only mechanical contact: soldering.

The new thin-film chip capacitors are wider, but their metallic footpads are much thinner. This means more capacitance, and it

also means that the average height of the chip capacitor will shrink.

## **INTELLIGENT BATTERIES**

Fed up with the battery pack in your HT dying off? We may soon have devices built inside batteries that tell us when it's really time to put them back into the charger. The cellular telephone industry wants to use intelligent battery chargers to monitor exactly how rechargeable batteries will perform. Tiny microcontrollers use an eight-bit serial data link to monitor between-charge cycles. They keep track of how many times the battery has been charged, their impedance, and if their temperatures increase. All that information is then stored within the microcontroller's main memory. Each battery gets its own built-in microcontroller! These devices work at low voltages, such as 1.8 V and 2.4 V.

## **HDTV SELECTION DELAYED**

The FCC was supposed to formally approve an HDTV (high definition television) standard on February 24th, but it won't happen. It has been put off until at least August. The selection process began five years ago.

The five possible formats have, however, been reduced to four which appear equal in quality. The Japan Broadcasting NHK's Narrow MUSE system has been eliminated since it is not based on all-digital technology.

The FCC's advisory committee (headed up by ex-FCC Chairman Dick Wiley) says the panel needs more testing - especially in the area of coverage area, modulation and susceptibility to interference. General Instrument, Zenith, AT&T, Thompson Consumer Electronics, David Sarnoff Research Center, NBC and North American Philips all have a stake the surviving systems.

## **CD-QUALITY AUDIO PROGRAMS!**

You can expect to be hearing perfect radio quality in your home as digital audio expands into the consumer marketplace! Time Warner Cable and Sony Corp. have recently bought a major stake in DCR - Digital Cable Radio. The \$20 million will be used to expand the DCR network. Time Warner and Sony, the world's two largest record companies, will receive a "licensing fee" from DCR.

DCR wants to expand from 28 to 58 channels of digital audio programming next year - and eventually to 250 channels. Delivered by cable, DCR is already available to some 5-million homes. (Only about 50,000 of that number actually subscribe at about \$10 a month.) A competitor, Digital Music Express - has about 120,000 subscribers.

But cable delivery won't be the only way the public will be able to receive digital audio. It will also be available over-the-air. The broadcast radio industry opposes the FCC's plan to allocate S-band spectrum to Satellite Digital Audio Broadcasting (DAB). They say it will destroy local AM and FM radio.

The FCC proposed an allocation of 50 MHz (between 2310 and 2360 MHz) for DAB last fall. Digital Audio Broadcasting is the audio version of DBS - Direct Broadcast Satellites - that ten years ago promised to beam TV direct to the home. The public is still waiting for television broadcasts from space.

If DAB must be implemented, the National Assoc. of Broadcasters wants it activated through local radio stations rather than by direct-to-the-home satellites. DAB providers, however, believe that the marketplace should decide how broadcast digital audio should be made available to the public.

One thing is certain. Crystal-clear CD-quality digital audio is on its way and what will happen to analog radio is anybody's guess!



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #8

March 1, 1993

- The FCC has fined **Richard L. Whiten, WB2OTK (Taylors, SC)** \$10,500 for jamming 14.313 MHz last fall. Whiten denies he was causing willful interference and that he was the "victim of entrapment" by other operators. It was Whiten's third jamming fine.

- The FCC is writing to the doctors of certain **"severely handicapped" amateurs who apply for 13 and 20 wpm telegraphy exemptions**. The telegraphy credit is disallowed if the doctor can not substantiate that the disability prevents the applicant from passing the code test.

- Last fall, we received a letter from the Tamagua Transmitting Society (a Pennsylvania Amateur Radio club) concerning their club's ham teaching/testing function.

**Allen R. Breiner, W3TI**, wanted to know whether it is permissible for ham classroom **instructors to distribute written information** to students and then act as volunteer examiners for the course ending examinations.

Breiner said the club's instructors had been passing out free information sheets and reselling (at no profit whatsoever) study manuals which the club was able to purchase in bulk at a discount. "We have been doing this for years," he wrote. We wrote the FCC for a ruling.

On January 27, 1993, we received a letter from Maurice J. DePont, attorney in the FCC's Personal Radio Branch, Washington, D.C. Here is his answer:

- (1.) Volunteer Examiners may be instructors;
- (2.) However, instructors who are VE's may not distribute any materials or publications used in preparation for obtaining an amateur license.
- (3.) The fact that any materials are distributed to students on a no-profit basis is irrelevant.

DePont referred us to §4(f) and §4(b) of the Communications Act of

1934, as amended and to 47 CFR §97.515(b) of the Rules.

Part §97.515(b) clearly says "Any person ...engaged in the preparation or distribution of any publication used in preparation for obtaining amateur licenses, is ineligible to be an administering VE."

Volunteer examiners who conduct ham classes and then administer course ending examinations must have all license preparation materials distributed by individuals not involved in the examining function. This even means that an "Elmer" may not provide a free Novice manual - or even a frequency list - to a youngster and then participate in the examination.

- We obtained a copy of the *Notice of Apparent Liability for a Forfeiture* that was issued to FM radio station KLSX, Los Angeles for broadcasting **indecent material during "The Howard Stern Show."** The \$12,500 base amount of the fine was increased to a whopping \$105,000.00 due to the outrageous nature of the material and the number of days it was broadcast. The NAL had a 19 page transcript of the "material" and it is indeed very, very rough.

Stern maintains the Commission is violating his First Amendment right to free speech. The FCC says the public airwaves should not be used for disseminating indecent material defined as offensive language which describes sexual or excretory activities or organs.

Various radio and television networks, the National Association of Broadcasters and other organizations have now banded together and are challenging the FCC's new indecency regulations (released Jan. 22) which permit indecent material to be broadcast only between midnight and 6 a.m. They believe the FCC should allow broadcasters to make their own determination as to whether material is ...or is not indecent or appropriate for their audiences.

- Intel says it has its new 64-bit **Pentium microprocessor ready to ship!** But beware. Today's PC's are configured to run 32-bit processors and can't take advantage of its 64-bit architecture. 486 based machines will be the mainstay PC "brain" for some time to come!

Let's put PC's in perspective. More personal computers are sold than TV's and VCR's put together and there are now more floppy disks on this planet than people. Very impressive when you realize that PC's didn't exist eighteen years ago! Almost every PC has at least one Intel chip in it! The Pentium microchip has the equivalent of three million transistors.

Intel's founder, Andrew Grove, fled his native Hungary in 1956 with only \$20 in his pocket. This year, Grove will spend \$2.5 billion for R&D. He says the next big computer applications category will be in the area of Electronic Meetings - the marriage of video, audio, E-mail and shared access to documents. That's where the Pentium microchip comes in. It is good at processing video images.

In 1984, the IBM-PC commanded about half of the personal computing market ...about \$4 billion worth were sold. All had Intel brains and Microsoft nerves. In 1992, IBM owns only a 15% share, lost \$5 billion and cut 40,000 employees. While IBM's market share has nosedived, Intel and Microsoft are enjoying huge sales and profit increases. They did it by selling microprocessors and operating system software (the two most profitable PC components) to the clonemakers who consistently undersold IBM.

The new Microsoft DOS 6.0 operating system (set for a March/April rollout) will have two new features that almost guarantee it to be a winner! First it will have file compression and secondly, peer-to-peer networking capability which will allow DOS machines to talk to other DOS machines.



# W5YI REPORT

Nation's Oldest Ham Radio Newsletter

Page #9

March 1, 1993

• Tandy/Radio Shack Stores has an *opening for a Communications Equipment Buyer* at their Fort Worth, Texas headquarters. Salary Open. Must have retail buying experience. Ham ticket helpful. Apply to **Bob Miller, AA5FL**, V.P.-Merchandising, Tel. (817) 390-3135. (*Tandy Corp., 1500 One Tandy Center, Ft. Worth, TX 76102*)

• *New cable TV rules are now emerging from the FCC as part of the Cable Act.* Cable companies will not be allowed to routinely remove home cable wiring when service is terminated until subscribers are offered a chance to purchase it on a "cost-per-foot" basis. Home owners, who don't wish to purchase the cabling, get to keep the wiring free if the cable operator fails to remove it within 30 days.

And cable operators will be required to block access to channels with indecent programming unless the subscriber - who must be over 18 years old - provides the cable company with a written request to receive the telecasts. Cable operators will also be able to require affidavits from programmers certifying that their material is not obscene or indecent.

Studies by over-the-air broadcasters indicate that the real cost of basic 16-channel cable service averages \$4.52. Cable operators say it is between \$12 and \$15. The FCC needs this information to come up with the rate regulation guidelines required by the Cable Act. The National Association of Broadcasters says the cable industry imposes what amounts to "monopoly overcharges."

• *Anybody want to buy their own DX frequency?* A bill (H.R. 707) to transfer 200 MHz of radio spectrum to the private sector from the government controlled arsenal has once again been approved by the House Telecommunications Subcommittee. The Senate is now considering the legislation.

The big question is how will

the spectrum be awarded. The FCC wants to auction it off to the highest bidder rather than give it away through the comparative hearing or lottery process. Congress does not agree and the House version of the *Emerging Technologies Act* does not provide for the sale of radio spectrum.

Estimates are that if the 200 MHz is sold, it could bring the U.S. treasury \$2.5 billion to offset the government budget deficit. (Your own 10 kHz wide DX frequency, by the way, would sell for \$1,250,000.)

• *Do you still receive unsolicited advertisements on your FAX machine?* The FCC has distributed a Consumer Alert notifying the public about the law which bans the transmission of advertising material to telephone facsimile machines without the prior express permission or invitation of the party receiving the facsimile. FCC rules also require that any message to a FAX machine must clearly mark (1) the date and time of the transmission, (2) the identity of the sender, (3) the telephone number of the sender or of the sending machine and; (4) all FAX machines manufactured after Dec. 20, 1992, must clearly mark such identifying information on the first page or on each page of the transmission.

And speaking of FAX machines, *Sharp Consumer Electronics has just introduced its new NX-1 Home Fax*, an under-counter or wall-mounted kitchen appliance. The 8-by-10 inch machine uses smaller rolls containing heavier paper. (Lists for \$495.95)

• *NEC Technologies, Japan's biggest computer maker*, is changing their image. They have developed a new blue logo and are spending \$200 million to redesign and repackage all computer products sold in the U.S. NEC Corp., (\$28 billion in sales last year - second only to IBM) began in 1899 as Nippon Electric Company, a maker of telephone equipment.

• *Al Moskowitz, KA3HSZ*, of Plano, Texas, has answered his \$2,000 *Notice of Liability for Forfeiture* (an FCC fine) assessed for jamming 14.313 MHz by stating that the two operators he is accused of interfering with moved to his frequency - not the other way around. Moskowitz admitted, however, that he was belligerent, frustrated that he was being harassed ...and that his language "may not have been entirely appropriate." He says that "...this forfeiture should not be imposed."

• The Washington, DC based *Cellular Telecommunications Industry Association* has arranged a massive mailing to the nation's cellular phone users stressing that *"...radio transmissions from cellular telephones pose no health risk."*

The CTIA information brochure contends cellular telephones fall safely within all industry and government approved standards designed to prevent excessive exposure to radio waves.

"The cellular portable unit emits 0.6 W, a power level well below the 2.0 W commonly used for CB handheld portable transceivers, and the 5.0 W commonly used for hand-held marine transceivers."

Most 144/222/440 MHz/1.2 GHz ham band HT's also radiate up to 5.0 W, we might add.

• A Canadian couple, *Ed, VE3LML* and *Ine, VE3OTV* Rehfuhs of Thunder Bay, Ontario, have been *found not guilty of "criminal mischief"* charges that their ham radio transmissions interfered with neighboring telephone and other home electronic equipment. The complaints were triggered by the installation of a higher tower. The Canadian DOC (similar to our FCC) said the amateur transmissions were "...within established regulations and certification requirements ...and the (neighbor's) radio sensitive equipment lacks the circuitry required to operate properly in the presence of strong radio signals."



## ILLEGAL BUSINESS OPERATION ON 450 MHz BAND

The Dallas FCC Field Office has acknowledged that they are considering fining a Houston firm for renting hand-held business radios that operate on the ham bands. A film production company shooting a Chuck Norris movie for television in downtown Fort Worth was totally unaware that the radios they rented to coordinate the filming were Motorola business radios illegally programmed to operate on 443.0125 and 445.6125 MHz amateur spectrum. The FCC would not release the name of the Houston rental company until their investigation is complete.

## NORTH TEXAS BALLOON PROJECT A SUCCESS!

The North Texas Balloon Project, whose second flight was scrubbed twice due to weather problems, finally flew on Saturday, February 6th, 1993. The hams launched it from the Municipal Airport in Cleburne, 30 miles south of Fort Worth, Texas at 1509 UTC (9:09 a.m. local time). The package, shaped like an Apollo command module, unfortunately became entangled in the parachute shroud lines during release and created several problems.

The telemetry sent back from the package indicates that it may have reached a maximum height of 85,000 ft at 1600 UTC. The coldest temperature the package encountered was -54°F. Due to a faulty connector, the on-board device designed to burn through the lanyard connecting the balloon to the package upon command from the ground failed to function. So the package parachuted to earth of its own accord after the balloon burst, landing at 1655 UTC.

How far did it travel? Only a little over 30 miles. The chase team found it 60 miles south of Fort Worth, snagged in a tree only 200 yards from the water on the western shores of Lake Whitney! Other hams across Texas reported hearing the 2-meter transmission, and one 10-meter reception was claimed in Denver. The NTBP plans another launch (Mission #3) within only a few months.

## BRITISH NOVICES GET MORE SPECTRUM!

Effective February 1st, British Novice operators have had their frequency privileges expanded to include more HF, VHF and UHF spectrum. The Radio-communications Agency (a branch of the UK Dept. of Trade and Industry - similar to our FCC) issued a Public Notice on January 29th advising that:

"The Agency is changing the *Schedule to the Amateur Radio (Novice) License* to improve the facilities available without losing the incentive nature of the license. ...The Novice license scheme was designed primarily but not exclusively to encourage more young people into radio and electronics - which is important

for the future well-being of this country. Many of the present leaders in the electronics, radio and computer industries started out as radio amateurs."

"A review of Novice frequencies was carefully undertaken. A suggestion that 144-146 MHz (where 2-meter repeaters operate in Great Britain) be added to Novice spectrum was not adopted because "...the band is subject to congestion and poor operating practices. All of the review participants agreed that 144-146 MHz would not assist Novices in training or offer them the incentive to progress to a full license. The less densely populated bands would provide a better introduction to amateur radio", the press release said.

There are two Novice amateur radio licenses in Great Britain, a no-code Novice Class "B" and a Class "A" which requires the addition of 5 words-per-minute code test. The following are the Novice UK privileges.

MHz.	Class	Novice
Requires 5 wpm	code	Frequency Privileges
1.1950-2.000	A	Morse, telephony, RTTY, data
3.560-3.585*	A	Morse (+5 kHz)
10.130-10.140	A	Morse
21.100-21.149	A	Morse
28.060-28.190*	A	Morse, RTTY, data (+40 kHz)
28.225-28.300	A	Morse, RTTY, data
28.300-28.500	A	Morse, telephony

Does not require	code	Frequency Privileges
50.0-52.0*	A/B	Morse, telephony, data
432.0-435.0*	A/B	Morse, telephony, data
435.0-440.0*	A/B	Morse, telephony, data, SSTV, FSTV
1240-1325	A/B	Morse, telephony, RTTY, data, facsimile, SSTV, FSTV
10000-10500	A/B	Morse, telephony, RTTY, data, facsimile, SSTV, FSTV

\* = New frequencies added to Novice: 3.560-3.565, 28.060-28.100, 432-433 and 435-440 MHz. In addition, Novice privileges in the previous six meter (51.250-51.750 MHz) band were expanded to 50 to 52 MHz. The biggest spectrum increases came at six meters (1.5 MHz added) and 432-440 MHz (6 MHz additional.) There is no 222-225 MHz ham band in the UK.

A formal (30 hour) training program and an examination fee is required to obtain a UK Novice ticket. A 45 question written examination administered at the City and Guilds Centres covers: (1.) Receivers and receiving techniques, (2.) Components, applications and units, (3.) Measurements, (4.) Propagation and antennas, (5.) Transmitters and transmitting techniques, (6.) Operating techniques, (7.) Station layout, (8.) Construction, (9.) Safety, and (10.) Licensing conditions.

Two licensing fees are required if the applicant passes both the "A" and "B" Novice requirements.